Amendments to the claims:

1-31. (Canceled)

32.   (currently amended) A system ~~breathing mask~~ for monitoring a patient during gas delivery comprising:

a breathing mask including a body having an internal surface, an external surface, and a perimeter surface shaped to form a seal around the patient's nose; and

a headgear adapted to retain the body on the patient's head, the headgear having at least one EEG sensor positioned thereon to detect brain activity;

a processor adapted to receive a signal from said at least one EEG sensor, said processor determining said patient's sleep stage based at least in part on said signal; and

a gas delivery device in communication with said breathing mask, said gas delivery device delivering gas to the patient based on a processor determination of said patient's breathing and sleep stage.

33-56. canceled

57.   (currently amended) The ~~breathing mask~~ system of claim 32, wherein the headgear is a cap.

58.   (currently amended) The ~~breathing mask~~ system of claim 32, wherein the perimeter surface is adapted to detect ECG.

59.   (currently amended) The ~~breathing mask~~ <u>system</u> of claim 32, and further

comprising a flow sensor connected to the internal surface.

60.   (currently amended) The ~~breathing mask~~ <u>system</u> of claim 32, and further

comprising an oxygen saturation sensor extended from the mask.

61.   (currently amended) The ~~breathing mask~~ <u>system</u> of claim 32, wherein the

perimeter surface is adapted to detect muscle movements.

62.   (currently amended) A nasal ventilation ~~mask~~ <u>system</u> comprising:

<u>a mask including</u> a body having an internal surface, an external surface, and a

perimeter surface adapted to form seal around a patient's nose,

an airhose extending from the body;

a headgear adapted to retain the body on the patient's head, the headgear having

at least one EEG sensor positioned thereon to detect brain activity; ~~and~~

at least one EMG sensor connected to the body and positioned to detect muscle

activity relating to a sleep ~~state~~ <u>stage</u>;

<u>a processor in communication with said at least one EEG sensor and said at least</u>

<u>one EMG sensor, said processor determining said patient's sleep stage based at least in part on a</u>

<u>signal received from said at least one EEG sensor; and</u>

a gas delivery device in communication with said mask, said gas delivery device changing a delivered air pressure to said patient based on a sleep stage determination by said processor.

63.   (currently amended) The ~~mask~~ system of claim 62, and further comprising a first sensor positioned on the internal surface for detecting nasal breathing and a second sensor positioned on the external surface for detecting oral breathing.

64.   (currently amended) The ~~mask~~ system of claim 63, wherein the first and second sensors are thermal sensors.

65.   (currently amended) The ~~mask~~ system of claim 62, and further comprising at least one EEG sensor positioned on the perimeter surface.

66.   (currently amended) The ~~mask~~ system of claim 62, and further comprising at least one EOG sensor positioned on the perimeter surface.

67.   (currently amended) The ~~mask~~ system of claim 62, wherein a portion of the perimeter surface is comprised of a conductive carbonized rubber material.

68.   (currently amended) The ~~mask~~ system of claim 62, and further comprising a plurality of straps coupled to the body, the straps having at least one sensor positioned thereon.

69.   (currently amended) The ~~mask~~ system of claim 62, and further comprising a position sensor coupled to the body.

70.   (currently amended) The ~~mask~~ system of claim 62, and further comprising a microphone coupled to the body.

71.   (currently amended) The ~~mask~~ system of claim 62, wherein the perimeter surface ~~is adapted to sense air leaks~~ is provided with a thermally sensitive material, and wherein said system adjusts a gas pressure based on a processor determination of an air leak as indicated by a change in said thermally sensitive material.

72.   (currently amended) The ~~mask~~ system of claim 62, and further comprising a patient recycled air detection system positioned on the internal surface.

73.   (currently amended) A nasal ventilation mask assembly comprising:

a nasal mask adapted to form a seal around a patient's nose; ~~and~~

a headgear adapted to retain the body on the patient's head, the headgear having an EEG sensor positioned thereon to contact a patient's forehead upon application of the nasal mask;

a processor adapted to receive signals from said EEG sensor and to determine said patient's sleep stage;

a gas delivery device in communication with said nasal mask, said gas delivery device changing a delivered gas pressure to said patient based on said processor determination of said patient's sleep stage.

74.   (currently amended) The mask <u>assembly</u> of claim 73 and further comprising a

computer in communication with the sensor, the computer adapted to determine arousal.

75. (Canceled)

76. (currently amended) The mask <u>assembly</u> of claim 73 and further comprising an EMG

sensor coupled to the nasal mask.

77. (currently amended) A breathing mask <u>assembly</u> for monitoring a patient during gas delivery

comprising:

       a body having an internal surface, an external surface, and a perimeter surface

shaped to form a seal around the patient's nose and mouth; ~~and~~

       a headgear adapted to retain the body on the patient's head, the headgear having

at least one EEG sensor positioned thereon so as to be positioned on a top portion of a patient's

head<u>;</u>

       <u>a processor adapted to receive a signal from said at least one EEG sensor, said</u>

<u>processor determining said patient's sleep stage based at least in part on said signal;</u>

       <u>and a gas delivery device controlled by said processor to adjust gas pressure</u>

<u>delivered to said patient based at least in part on a determination of said patient's sleep stage.</u>

78.   (canceled)

79. (currently amended) A nasal ventilation system comprising:

a nasal mask adapted to form a seal around a patient's nose, the nasal mask having a body, an internal surface, an external surface, and a perimeter surface;

a headgear adapted to retain the body on a patient's head, the headgear having at least one EEG sensor positioned thereon so as to be positioned on a top portion of a patient's head;

an EMG sensor located on the perimeter surface; ~~and~~

a computer in communication with the EEG and EMG sensor, the computer adapted to determine sleep state based on an EEG signal and EMG signal of said patient; and

a gas delivery device in communication with said nasal mask and said computer, said gas delivery device adjusting a flow of air to the patient based on determined sleep stages of said patient.

80. (Canceled)

81. (Canceled)

82. (previously presented) The system of claim 79, and further comprising a sensor located on the external surface for determining if a patient is breathing through his mouth.

83. (previously presented) The system of claim 79, and further comprising a flow sensor located on the internal surface.